Evidence Based Library and Information Practice

Article

Enhancing Access to E-books

Karen Harker
Collection Assessment Librarian
University of North Texas Libraries
Denton, Texas, United States of America
Email: Karen.Harker@unt.edu

Catherine Sassen
Principal Catalog Librarian
University of North Texas Libraries
Denton, Texas, United States of America
Email: Catherine.Sassen@unt.edu

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Abstract

Objective – The objective of the study was to determine if summary notes or table of contents notes in catalogue records are associated with the usage of e-books in a large university library.

Methods – A retrospective cohort study, analyzing titles from three major collections of e-books was employed. Titles were categorized based on the inclusion of the MARC 505 note (table of contents) or MARC 520 note (summary) in the catalogue record. The usage was based on standardized reports from 2012-2013. The measures of usage were the number of titles used and the number of sections downloaded. Statistical methods used in the analysis included correlations and odd ratios (ORs). The usage measures were stratified by publication year and subject to adjust for the effects of these factors on usage.

Results – The analysis indicates that these enhancements to the catalogue record increase usage significantly and notably. The probability of an e-book with one of the catalogue record enhancements being used (as indicated by the OR) was over 80% greater than for titles lacking

the enhancements, and nearly twice as high for titles with both features. The differences were greatest among the oldest and the most recently published e-books, and those in science and technology. The differences were least among the e-books published between 1998 and 2007 and those in the humanities and social sciences.

Conclusion – Libraries can make their collections more accessible to users by enhancing bibliographic records with summary and table of contents notes, and by advocating for their inclusion in vendor-supplied records.

Introduction

While librarians may have suspected that a certain percentage of their collections would be more heavily used, it was the ground-breaking work in the 1960s and 1970s that brought the issue to light (Morse & Chen, 1975; Trueswell, 1968). Trueswell (1969) found that about 20% of the collections at University of Massachusetts and Mount Holyoke accounted for about 80% of the titles used. Galvin and Kent's (1977) landmark study showed that about 40% of a large academic collection at the University of Pittsburgh had never been used. More recently, a study from Auburn University demonstrated that these principles of print book circulation applied as well to electronic book usage (Best, 2008). But for all the circulation studies that quantified the distribution of usage, there have been relatively few studies that examined why some books are used and others are not.

The University of North Texas Libraries embarked on a pilot of patron-driven acquisitions (PDA) through a single vendor in 2012. Until then, the usage of individual e-books had not received much attention by the university librarians. It was primarily due to the direct association of usage to cost that we started carefully tracking this information. The program was quite successful, in that the percentage of titles used at least once was greater than for those e-books that librarians had previously purchased. Furthermore, only 18% of librarian-selected e-books were used again after their initial use, while 57% of PDA titles were used multiple times. We began to wonder about factors associated with patron usage.

E-book titles were made available through the Libraries' online catalogue, as well as through the vendor's platform, and we determined that the primary source for discovering these titles was the catalogue. Thus, patrons who searched the catalogue selected titles based solely on the contents of the MARC records. We considered what characteristics of the MARC records were associated with titles that were selected. Two characteristics were noticeable: inclusion of tables of contents and summaries. Is inclusion of tables of contents or summary statements in the MARC record associated with a greater likelihood of usage and the number of uses?

Literature Review

The enhancement of bibliographic records with tables of contents and other features dates back to the introduction of online catalogues. One of the earliest catalogue use studies that included this topic was the Online Catalog Public Access Project (Matthews & Lawrence, 1984). The Council on Library Resources (CLR) conducted this study in cooperation with the Library of Congress (LC), OCLC, the Research Libraries Group (RLG), the University of California Division of Library Automation, and Joseph Matthews and Associates, a library consulting firm (Matthews, 2014). Information was gathered from thousands of individuals through surveys and focus group interviews. When asked about the most desired enhancements to online catalogue records, library users specified that they would like to be able to search a book's table of contents, summary, and index. (Markey, 1983, p. 141).

Much later, in 2008, OCLC researchers administered a pop-up survey to WorldCat users and received 11,151 responses (Calhoun, Cantrell, Gallagher & Hawk, 2009, p. 7). WorldCat users were asked, "What changes would be most helpful to you in identifying the item that you need?", and the top five responses included summaries/abstracts (18%) and tables of contents (18%) (Calhoun et al., 2009, p. 13). OCLC researchers also covered this topic in a series of focus group interviews, comprised of eight undergraduates, eight "casual searchers", and finally, eight "scholars," including graduate students and faculty members (Calhoun et al., 2009, p. 6). The focus group participants indicated that summaries, abstracts and tables of contents are helpful for "a quick verification to determine if it is worth their time to even look at an item" (Calhoun et al., 2009, p. 17).

Libraries attempted to address this issue as early as the 1970s through bibliographic record enhancement projects. For the Subject Access Project, led by Cochrane (1978) at the University of Toronto, researchers created a test database of 1,979 catalogue records enhanced with table of contents and index information. When they performed 90 searches, they retrieved 56 relevant items in the enhanced database compared to 14 relevant items in the regular database. Users of the enhanced database reported that they were "able to find some items which would be impossible to locate with L.C. [Library of Congress] subject headings" (Cochrane, p. 86). Cochrane identified several benefits to searching enhanced records, including "greater access to the books with relevant information" and "greater precision, insuring fewer non-relevant items in the search output" (p. 85).

Researchers have tried to assess the value of enhanced catalogue records by studying the circulation rates of the items. In four separate experimental studies, researchers measured the circulation rate for materials before and after their catalogue records were enhanced. In the first study, no association was found between catalogue records enhanced with only table of contents notes and higher circulation rates (Knutson, 1991). This study involved 291 records divided into 3 groups: records enhanced with subject headings and table of contents information; records enhanced with table of contents only; and records in the control group that received no enhancements. The lack of association of enhancements with circulation rates may be explained by the small sample size. In three other experimental studies, researchers found that the circulation of titles increased from 5% to 25% after record enhancement (Dinkins & Kirkland, 2006; Faiks, Rademacher & Sheehan, 2007; Chercourt & Marshall, 2013).

In five other investigations, researchers conducted retrospective cohort studies to determine if library materials with enhanced catalogue records circulated more than those with unenhanced records (Morris, 2001; Madarash-Hill & Hill, 2004; Madarash-Hill & Hill, 2005; Tosaka & Weng, 2011; Kirkland, 2013). In each of these studies, catalogue record enhancements were associated with increased circulation rates. Tosaka and Weng (2011) conducted one of the largest of these studies at the College of New Jersey Library, involving 88,538 titles in 4 subject fields (history, social sciences, language and literature, and science and technology). The researchers found that titles published between 1990 and 2004 with enhanced records had 30% to 50% higher circulation than those with unenhanced records. However, record enhancement had no effect on the circulation of titles published between 2005 and 2008. The researchers found a correlation between recent publication dates and circulation, and suggested that library users prefer more recent publications (Tosaka & Weng, 2001, p. 420). The researchers also found that table of contents notes were associated with higher circulation, but not summary notes.

From the above research, it is apparent that tables of contents provide additional keywords that users need to identify resources. This

enhancement increases user access to library resources.

None of the nine prior studies examined the usage of e-books in relation to catalogue record enhancements. This study was designed to fill that research gap.

Aims

We began our investigation by asking why library users select certain e-books but not others after viewing their catalogue records. Based on the information gleaned from the literature review, we focused our study on the following research questions:

- What is the effect of table of contents or summary statement in the catalogue record on the number of uses of the e-book and the probability of being used at least once?
- What is the effect of year of publication and subject on total uses, as well as on the probability of being used?
- What is the effect of these catalogue record enhancements on total uses and the probability of a title being used at least once, controlling for publication year and subject?

From these questions, we developed these hypotheses:

- Titles with either the table of contents or a summary in the catalogue record would have more uses than titles with neither of these features, controlling for publication year and subject.
- Titles with both table of contents and summary in the catalogue record would have more uses, controlling for publication year and subject.
- Titles with either table of contents or summary in the catalogue record would have a greater probability of being used, controlling for publication year and subject.
- Titles with both table of contents and summary in the catalogue record would have a greater probability of being used, controlling for publication year and subject.

Methods

A retrospective cohort study design was employed.

Data Collection

Three e-book collections were included in this study: ebrary, EBSCO Ebooks and NetLibrary. The ebrary collection was available on the ebrary publishing platform. The EBSCO Ebooks and NetLibrary collections were available on the EBSCO publishing platform. The MARC records were downloaded from the integrated library system into a set of spreadsheets. The unit of analysis was the MARC record, which represented a unique e-book title from a particular vendor. While no attempt was made to analyze the distribution of titles by language, it is clear that the vast majority of the titles were in the English language. Usage data were collected from the platforms in the form of COUNTER Book Reports, either BR1 or BR2. The COUNTER BR1 (supplied by EBSCO) provides the "number of successful title requests," while the BR2 (supplied by ebrary) reports the "number of successful section requests" (COUNTER, 2008). The former reports the number of titles used, while the latter reports the number of chapters or other sections downloaded. While these are not the same measures, most platforms provide only one or the other. Therefore, "use" in this study is defined as either a request for an entire e-book or the downloading of chapters or other sections. The total usage for calendar years 2012 and 2013 was used as the measure of total usage. Titles with a usage of one or more were flagged as titles used. These two measures, total usage (counts) and titles used (binomial), were the

Table 1
Categories of Catalogue Record Enhancements (CRE)

Mutually-exclusive categories	**Non-Mutually-Exclusive categories**
• Neither table of contents (TOC) nor summary fields. • TOC only. • Summary only. • Both TOC and summary.	• Neither TOC nor summary fields. • TOC. • Summary. • Either TOC or summary, but not both. • Either TOC or summary, or both. • Both TOC and summary.

dependent variables in the analysis. Only titles continuously available from January 2012 through December 2013 were included in the study.

Other data collected included the MARC 505 (table of contents) and the MARC 520 (summary) fields. The records were classed in the following categories, based on the inclusion of either or both of these fields (see Table 1).

When considering the inclusion of the enhanced content as a single categorical variable, the categories must be mutually exclusive. However, this would fail to determine the impact of having one or the other, regardless of which one. Therefore, we conducted paired-comparisons analysis using the non-mutually exclusive categories, and categorical and multivariate statistical analyses using the mutually exclusive categories. The other independent variables were the publication year, as indicated in the catalogue record (MARC 260 subfield c), and broad subject categories based on Library of Congress (LC) class.

Statistical Analysis

Descriptive statistics were generated to evaluate the distribution of the catalogue records for each of the variables. These analyses included simple counts of records and percentages by categories, and means, medians and skew of distributions of continuous data (year of publication and usage). Bivariate analyses were then conducted between the various factors to identify relationships. This included cross-tabulations of categorical data, comparisons of means and distributions for continuous data, and correlations of the variables.

The statistical tests were selected based on the distributions of the data. Given that the interval data (year of publication and usage) were not normally distributed, non-parametric tests were used. Statistical tests of inference that are based on assumptions about the population (such as population distribution) are called parametric statistical analyses. These methods are quite commonly used, and include such well-known methods as the Student's t-test and linear regression. These methods, however, can lead to invalid results when the data does not conform to these assumptions about the distributions, such as categorical data. Non-parametric statistical tests of inference do not rely on assumptions about the distribution. These "distribution free" methods are most valid for categorical data or interval data that do not have the normal distribution or the "bell curve".

Odds ratios (ORs) were calculated for the cross-tabulations of titles used by each of the categories of catalogue record enhancement (CRE). The OR provides a simple measure of association of the exposure (the level of CRE) and the binary outcome (used or not used). It

ranges from zero to infinity, and a value of one indicates no difference in outcome between the two exposure groups (has or does not have the CRE). A value greater than one indicates a greater probability of use for a title with that level of CRE. A value less than one indicates that the title without that feature has greater probability of being used. The OR includes a 95% confidence interval (95% CI).

The OR is calculated by dividing the odds of titles used among those with a catalogue record enhancement by the odds of titles used among those without that feature (see Equation 1). The result is a positive number ranging from zero to infinity; the closer to 1.0, the more similar the probability of usage is between the two groups. An OR between 0 and 1 indicates that the items lacking tables of contents (TOCs) are more likely to be used, while an OR above 1 indicates items with the TOCs have greater probability of being used. A 95% confidence interval is used to test the OR against random variation. If the interval spans above and below 1.0, then there is too much variation in the measure for the estimate to be valid. ORs are measures of comparison of two non-overlapping groups. Figure 1 provides a summary of the groups that are compared.

	Outcome of Interest (Used)	**Not Outcome of Interest (Not Used)**
Exposed (Has CRE)	a	b
Not Exposed (Does not have CRE)	c	d

Figure 1
Table (2x2) of exposures and outcomes

$$\text{Odds Ratio (OR)} = \frac{a/c}{b/d}$$

Equation 1
Odds Ratio

Table 2
Broad Disciplines

Humanities	**Social Sciences**	**STEM**
B (Philosophy, Religion, excl. BF)	BF (Psychology)	G, GA-GF (Geography)
C, D, E, F (History)	GN-GV (Human Geography)	Q (Science)
M (Music)	H (Social Sciences)	R (Medicine)
N (Fine Arts)	J (Political Science)	S (Agriculture)
P (Language and Literature	K (Law)	T (Technology)
	L (Education)	
	U, V (Military, Naval Sciences)	

For comparing total uses across the factors, the Kruskal-Wallis rank test was used to test for significance. This is a non-parametric test of significance of differences in the distributions of uses between the two or more groups (with and without the CRE).

To control for differences due to subject coverage, the titles were categorized into one of three broad disciplines: humanities, social sciences and STEM (science, technology, engineering and mathematics). These categories are similar to those used by Michael Levine-Clark (2014) in his recent analysis of e-books from multiple collections. The only difference was the inclusion of ranges on geography (LC Class G), which we split between STEM and social sciences (see Table 2). Differences in the mean publication year and the inclusion of catalogue record enhancements between these broad disciplines were examined. In addition, we analyzed differences in the mean usage and ORs of being used to determine the effect of discipline on usage.

To control for year of publication, the titles were grouped by year, with roughly the same number of titles in each group, and the mean uses, as well as ORs of titles used, were compared between the groups. Differences in the means and the ORs between the groups were indications of the amount of influence the year of publication had on the effects of catalogue record enhancements on usage.

Table 1
Usage by Catalogue Record Enhancement

CRE Groups	# Titles in the CRE Group	# Titles *not* in the CRE Group	Uses per Title in the CRE Group	Uses per Title *not* in the CRE Group	% Titles used in CRE Group	% Titles *not* in the CRE Group used	OR (95% CI))
Has TOC only	19,704	56,763	11.3	3.8	26.4%	16.2%	1.9* (1.8-1.9)
Has TOC	24,050	52,417	14	1.9	28.3%	14.4%	2.3* (2.25-2.4)
Has summary only	1,828	74,639	20.9	4.4	32.0%	17.6%	2.2* (2.1-2.3)
Has summary	*6,174*	*70,293*	*8*	*5.7*	*20.0%*	*18.8%*	*1.1 (0.96-1.2)*
Has either but not both	21,532	54,935	11	3.7	25.8%	16.0%	1.8* (1.75-1.9)
Has either or both	25,878	50,589	13.6	1.7	27.7%	14.2%	2.3* (2.2-2.4)
Has both	4,346	72,121	26.3	4.5	37.0%	17.7%	2.7* (2.6-2.9)

* $p<0.05$

Results

The data set used in the final analysis included a total of 76,467 records from 3 collections. About 32% of the titles (24,050) had TOCs in the catalogue records, and only about 8% of the titles (6,174) included summaries. The distribution of titles with TOCs and summaries was not equal across platforms. Similarly, the collections varied in the mean and median publication years, with titles from the EBSCO or NetLibrary sets more than ten years older than the ebrary titles.

Usage by Catalogue Record Enhancements (CRE)

There were apparent differences in the publication year, mean usage, and number of titles used between the groups that have and do not have the enhanced catalogue content (see Table 3). Those with the added content were more recently published, and had much higher mean usage and greater rate of titles used. A wide range of analytical techniques was used to determine if these differences were due to publication year, subject, or chance.

The simplest method was a cross-tabulation of titles used by the exposure (i.e., the enhanced catalogue content). Using such a method, we can provide an OR measure that describes the probability that a title having the exposure (TOC or summary in catalogue record) was used against a title lacking the exposure.

Most of the ORs were significant, favouring the inclusion of at least one of the catalogue record enhancements, and the highest OR favoured having both (see Table 3). The analysis shows that a title with at least one of the features was over 80% more likely to be used than those with neither, and over twice as likely if it has both features. Titles having the keyword summary only, however, were not significantly more likely to be used. It is clear that TOCs and summaries in the catalogue record had a positive effect on the title being used at least once. The publication year in all of these groups, however, was also associated with the inclusion of catalogue record enhancements, and must be taken into consideration before concluding that the enhancements were, indeed, associated with increased usage.

Distribution by Publication Year

Because the publication year had been identified as a key factor in usage of items, we evaluated the distribution of e-books by publication year (Tosaka & Weng, 2011, p. 419; Morris, 2001, p. 34). Interestingly, the distribution of publication years was bimodal (two "humps") (see Figure 2). There is a drop in the number of titles between 2003 and 2008. This, combined with the severe skewing to the left, indicated that statistical tests based on normal distributions would not be appropriate. The titles were then grouped by publication year into four approximately equal groups based on their distribution: <=1998, 1999-2001, 2002-2007, >=2008.

The distribution of catalogue enhancements varied across the publication year groups. Generally, the more recently published books had greater rates of these enhancements, as well as lower rates of only one of the enhancements (see Table 4).

Similar to Tosaka and Weng (2011, p. 417-418), we determined that the e-book records with TOCs and those with summaries tended to be more recent than those without (see Table 3). To determine if this variation could be random, we used the non-parametric tests, Mann-Whitney U and Kolmogonov-Smirnov tests, comparing the mean publication years between those with and

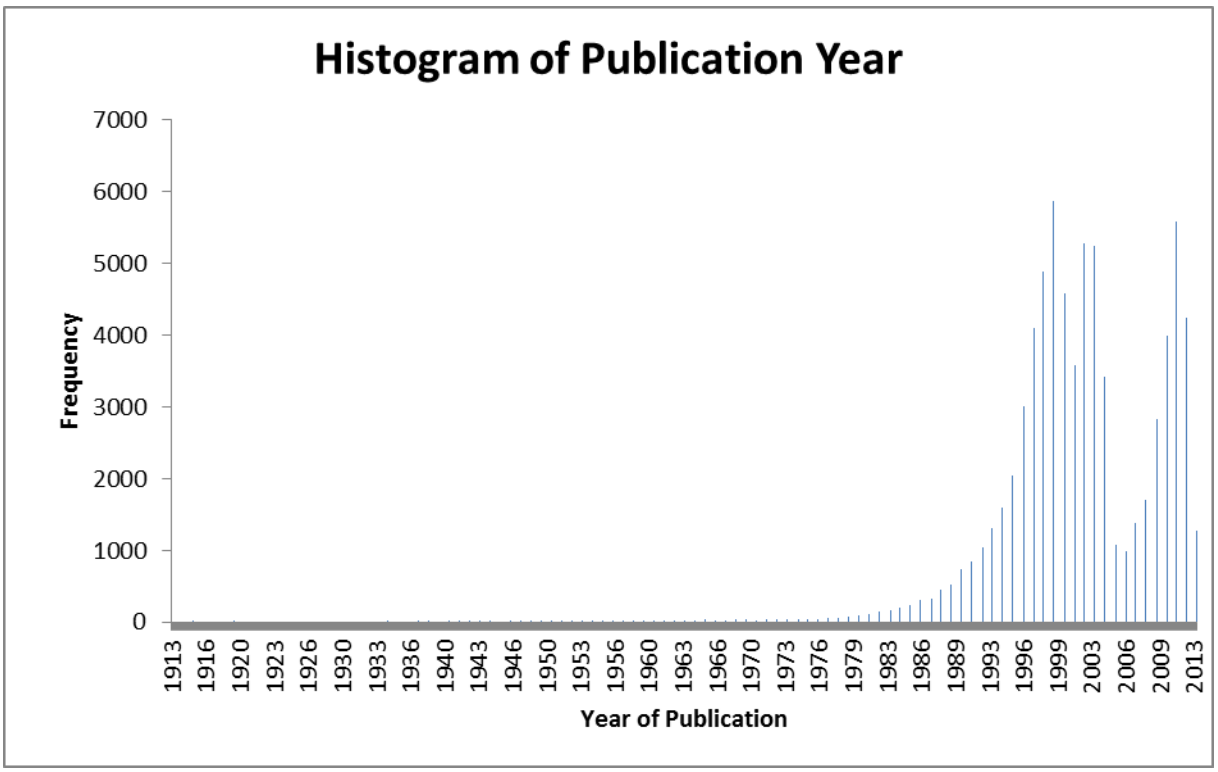

Figure 1
Distribution of titles by publication year

Table 2
Distribution of CRE by Publication Year

Categories	<1998	1998-2001	2002-2007	>=2008
Has TOC	5.6%	8.3%	26%	60.1%
Has Summary	8.4%	11.3%	22.5%	15%
Has TOC Only	6.5%	9.4%	27.4%	56.7%
Has Summary Only	25.5%	30.7%	10.6%	33.1%
Either TOC, not both	8.1%	11.2%	26%	54.7%
Either or Both	7%	9.9%	24.9%	54.2%
Both TOC and Summary	1.4%	3.4%	19.6%	75.7%

without the TOCs, and with and without summaries. In addition, we ran Kruskal-Wallis one-way ANOVA, comparing the distribution of publication years across all four groups. The null hypothesis for this test was that the distributions of publication years were similar for those with and lacking content enhancements in the catalogue records.

The results indicated that the differences in year of publication between having and not having the content enhancements were not likely due to chance ($p<0.001$) (see Table 5). This clearly indicated that publication years were different between the two exposed groups of bibliographic records.

Table 5
Median Publication Year by Groups

	# Titles	**Median Publication Year**
Overall	73,936	2002
Has Neither	48,104 (65%)	1999
Has Summary Only	1,789 (2.4%)	2000
Has TOC Only	19,697 (26.6%)	2009
Has Both	4,346 (6%)	2010

Table 6
Usage by Publication Year Group

Publication Year Group	Mean Uses	% Used
<1998	0.45	1.6%
1998-2001	0.89	2.2%
2002-2007	3.09	2.7%
>=2008	18.31	4.6%

Table 7
Usage by Broad Discipline

	n (%)	**Mean Uses**	**% Used**	**OR (95% CI)**
Humanities	28,735 (38%)	4.5	2.4%	1.2 (1.1-1.3)
Social Sciences	29,778 (39%)	6.1	3.1%	0.8 (0.73-0.87)
STEM	17,684 (23%)	7.1	2.6%	1.07 (0.96-1.2)
Overall	76,197 (100%)	5.7	2.7%	

As Bucknell (2010, p. 128-129) documented, we found that publication year was also a factor in usage of e-books (see Table 6). The simplest way to determine this was through correlation analysis. Because of the severe skewedness of both usage and publication year, the statistic used was Spearman's correlation factor, which, although statistically significant, was quite low (Spearman's r=0.191) on a scale of -1 to +1. Analyzing usage by publication year group revealed more substantive differences.

The usage of these groups was compared using the non-parametric statistical test, Kruskal-Wallis one-way ANOVA, setting the significance level at 0.01 and the confidence interval at 99%. This test allows comparisons of usage across multiple groups. The null hypothesis in this analysis was that the usage would be similar across all four publication year groups. This null hypothesis was rejected ($p<=0.001$), indicating that usage was clearly associated with publication year; more recent titles garnered more uses than earlier titles.

Given the association of publication year on the exposure variables (catalogue record enhancements) and on the outcome (usage), it was clear that publication year could confound the effect of the catalogue record enhancements on usage, making it difficult to tell the difference between the effects of the age of the book and those of the catalogue record enhancements

Usage Across Broad Disciplines

As mentioned above, the titles were categorized into one of three broad disciplines based on their LC classification. There was a negligible set (270 titles, 0.4%) that were not categorized due to various reasons. The distribution of titles across these three categories was not even, with just under 40% in both humanities and social sciences, and just over 20% in STEM. Usage of titles within each category varied slightly (see Table 7), with STEM titles having the most mean uses per title (7) and social sciences titles having a greater percentage of titles used at least once (3%). While the ORs of the paired-comparisons of these groups were statistically significant, the size of their effect (20% greater or lesser odds of usage) was not very notable. It appears that broad discipline may have had a slight effect on usage.

Adjusting for Publication Year and Broad Discipline

To understand the effect of publication year and broad discipline on the odds of being used, we stratified the analysis by publication year group, and separately discipline, and compared the ORs (see Table 10). Our hypothesis was that the OR of use would increase across all publication year groups with more catalogue content enhancement. Only the earliest and most recent titles (publication year either before 1998 or after 2007) demonstrated this pattern (see Table 8). By adjusting for publication year, there did not appear to be a clear association between the catalogue record enhancements and use, except for oldest and most recent publications.

The inclusion of the catalogue record enhancements varied across the three broad disciplines, with social sciences having the most and STEM having the least percentage of enhanced records (see Table 9).

To determine the combined effect of catalogue record enhancements and broad discipline on usage, we examined the ORs comparing rates of usage by catalogue record enhancement for each discipline separately. If the ORs did not differ

Table 3
Odds Ratios of Usage by Publication Year Group

Categories	<1998	1998-2001	2002-2007	>=2008
Has TOC	**1.6**	1.3	1.1	**1.44**
Has Summary	**2.2**	0.8	0.7	**1.8**
Has TOC Only	**1.7**	1.3	1.2	0.9
Has Summary Only	**2.3**	0.9	1.2	**1.4**
Either TOC, not both	**1.9**	1.2	1.2	0.9
Either or Both	**1.9**	1.2	1.1	**1.6**
Both TOC and Summary	1.0	0.6	0.6	**1.8**

Table 4
Distribution of CRE by Discipline

Catalogue Record Enhancement	Humanities	Social Sciences	STEM	Overall
Has TOC Only	27%	29%	20%	26%
Has Summary Only	3%	2%	3%	2%
Has TOC	32%	35%	24%	32%
Has Summary	8%	8%	8%	8%
Has Either, Not Both	29%	31%	23%	28%
Has Either or Both	34%	37%	28%	34%
Has Both	5%	7%	5%	6%

Table 5
Odds Ratios of Usage by CRE and Discipline

Catalogue Record Enhancement	Humanities	Social Sciences	STEM	Overall
Has TOC Only	**1.5**	**1.5**	**2**	**1.86**
Has Summary Only	**1.6**	**1.7**	**2.6**	*1.08*
Has TOC	**1.8**	**1.8**	**2.8**	**2.34**
Has Summary	**2.1**	**1.9**	*1.1*	**2.19**
Has Either, Not Both	**1.5**	**1.6**	**1.9**	**1.82**
Has Either or Both	**1.9**	**1.9**	**2.7**	**2.31**
Has Both	**2.2**	**1.9**	**3.5**	**2.73**

substantially across the disciplines, then the effect of discipline was minimal. It was apparent that the effect of catalogue record enhancements on usage did not vary between the humanities and social sciences; however, the effect of having TOCs or both was notably greater on STEM titles (see Table 10).

Discussion

Based on previous studies, it was apparent that publication year and subject could also affect usage (Tosaka & Weng, 2011, pp. 419-420; Morris, 2001, p. 34). We controlled for these factors by stratifying our analysis across different year groups and broad disciplines. Our primary outcomes (dependent variables) were number of titles used at least once, and the total number of uses.

Similar to Tosaka and Weng (2011, pp. 418-421) and Morris (2001, pp. 33-34), we found a direct correlation between inclusion of catalogue record enhancements in the MARC record and number of uses. We found that the probability of an e-book with one of the catalogue record enhancements being used (as indicated by the OR) was over 80% greater than for titles lacking the enhancements, and nearly twice as high for titles with both features. The differences were greatest among the oldest and the most recently published books, and in science and technology, and least among the books published between 1998 and 2007 and those in the humanities and social sciences. The reasons for this may be due to the distribution of the CREs being more balanced in the latter year groups (see Table 4), or perhaps due to the decrease in the distribution of titles from this year group (see Figure 2).

The limitations of which we were aware included the limited number of e-book platforms represented (two), the confluence of COUNTER BR1 (titles used) with BR2 (sections used) measures, the effects of assigned readings on usage, and any preference by the patrons for platform. When instructors request the library purchase titles for assigned readings, our policy is to purchase these titles as e-books with a licence to allow multiple users access. The data that identified such titles was not available for analysis, so this could be a factor in the results. Finally, while patrons may express their preference for e-book platforms in surveys and usability studies, demonstrated preference by platform through purposeful selection and non-selection should be examined more carefully.

Given the large sample size and the statistical analyses, the results demonstrate a clear and consistent relationship between catalogue record enhancements and e-book usage of any kind. Our next step is to conduct an experimental study, adding such content to randomly selected titles that had not been used. If an increase in the usage of these titles results, we will plan to add into the workflow the addition of these fields to the catalogue records. We also plan to extend this study to the use of printed materials, particularly those housed in remote storage facilities. We would like to know if adding such content will increase their likelihood of continued usage even after resources are removed from the open stacks. Finally, it would be interesting to examine the effects of providing bibliographic records with thumbnail cover images on usage.

Conclusion

Our primary reason for conducting this study was to better understand why certain e-books were used and others were not. Because usage data indicated that users discovered most titles in the catalogue, we focused on differences in the MARC catalogue record. The inclusion of enhancements to the catalogue records was our first target, notably the MARC 505 field for tables of contents (TOCs) and the MARC 520 field for summary statements. Our literature review indicated that such enhancements could be associated with increased likelihood of being used in print, as well as increased number of times being used. This study was a retrospective cohort study, where titles were categorized and their usage analyzed based on the inclusion of defined catalogue record enhancements. One cohort had MARC 505, another had MARC 520, and a final had neither. From the first two cohorts, we analyzed subgroups, including those that had one or the other but not both, and those with both. Because of the size of our collection (more than 75,000 titles, of which nearly 10,000 were used at least once), we were able to conduct subgroup analyses using robust statistical methods and significance criteria.

By studying information seeking behaviour, it is possible to discover catalogue record enhancements that have facilitated library users' research. By adding these enhancements to catalogue records, and by advocating for their inclusion in vendor-supplied records, libraries can make their catalogues and collections more accessible to users.

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